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CENTRAL FLOW CONTROL PRECEDENCE NETWORK (PN) USER'S MANUAL.(U)
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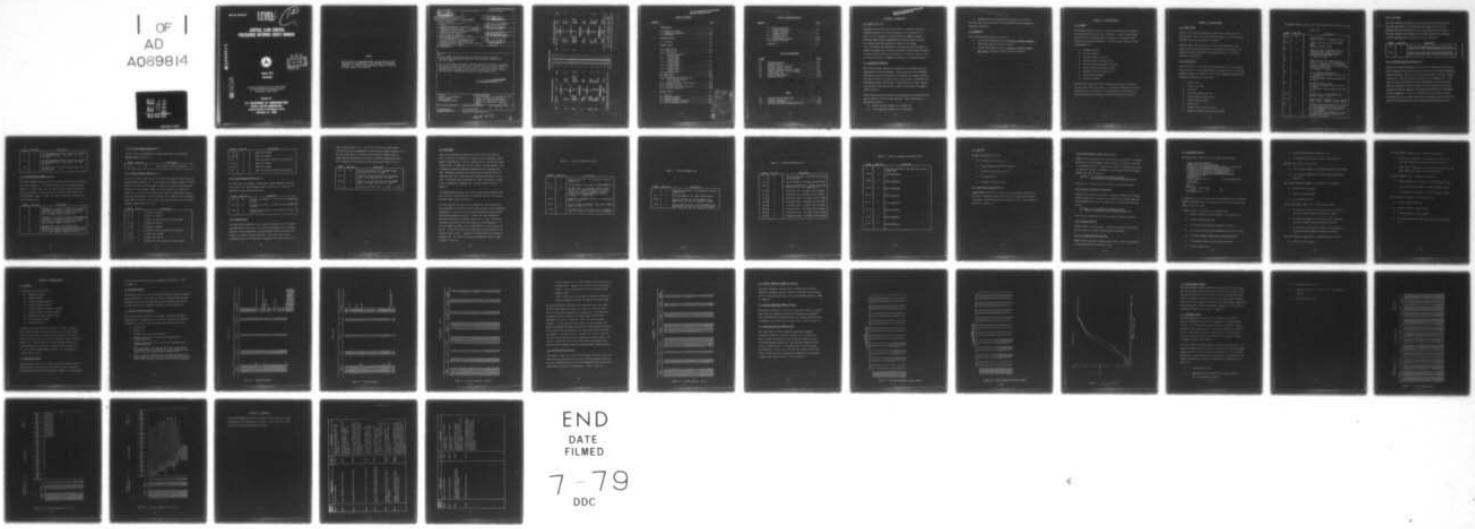

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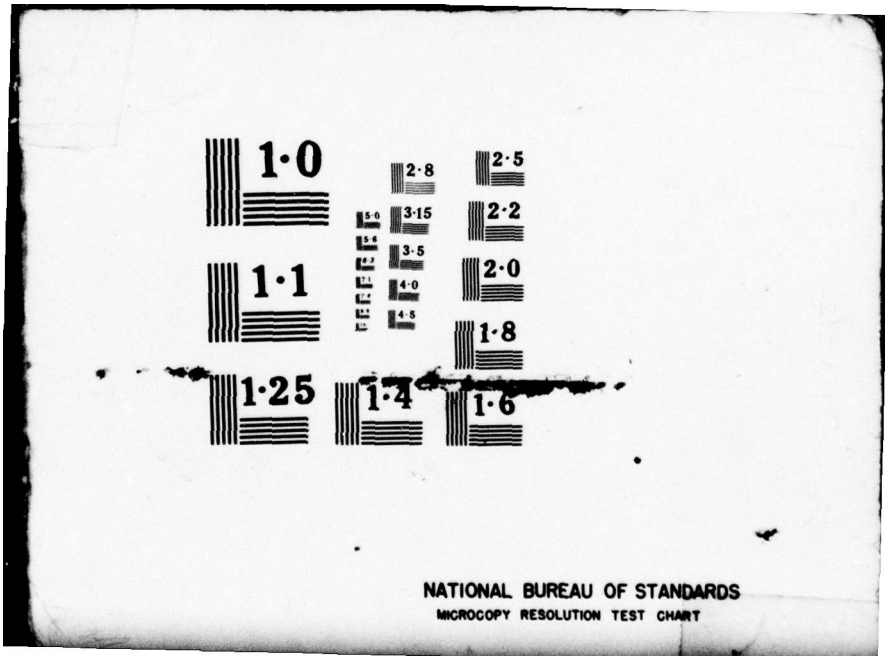
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NATIONAL BUREAU OF STANDARDS
MICROCOPY RESOLUTION TEST CHART

Report No. FAA-RD-79-43

LEVEL II

CENTRAL FLOW CONTROL PRECEDENCE NETWORK USER'S MANUAL

January 1979

Final Report

Prepared for

U.S. DEPARTMENT OF TRANSPORTATION
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16. Abstract

This document describes the functions of the Precedence Network (PN) program and details the procedures required to exercise them.

PN is an activity-oriented planning tool which provides critical-path-method (CPM), or PERT-like, estimation of project completion and identifies probable trouble areas. Outputs include time-ordered task listings, Gantt charts, weekly task status reports, and actual-vs.-estimated cumulative task completions.

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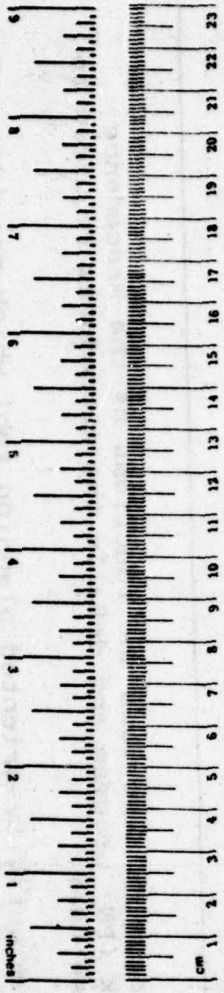
METRIC CONVERSION FACTORS

Approximate Conversions to Metric Measures

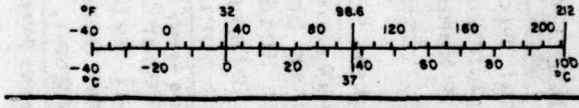
Symbol	When You Know	Multiply by	To Find	Symbol
		LENGTH		
in	inches	*2.5	centimeters	cm
ft	feet	30	centimeters	cm
yd	yards	0.9	meters	m
mi	miles	1.6	kilometers	km
		AREA		
in^2	square inches	6.5	square centimeters	cm^2
ft^2	square feet	0.09	square meters	m^2
yd^2	square yards	0.8	square meters	m^2
mi^2	square miles	2.6	square kilometers	km^2
	acres	0.4	hectares	ha
		MASS (weight)		
oz	ounces	28	grams	g
lb	pounds	0.45	kilograms	kg
	short tons (2000 lb)	0.9	tonnes	t
		VOLUME		
tsp	teaspoons	5	milliliters	ml
Tbsp	tablespoons	15	milliliters	ml
fl oz	fluid ounces	30	milliliters	ml
c	cups	0.24	liters	l
pt	pints	0.47	liters	l
qt	quarts	0.95	liters	l
gal	gallons	3.8	liters	l
ft^3	cubic feet	0.03	cubic meters	m^3
yd^3	cubic yards	0.76	cubic meters	m^3
		TEMPERATURE (exact)		
°F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C

*1 in = 2.54 (exactly). For other exact conversions and more detailed tables, see NBS Misc. Publ. 286, Units of Weights and Measures, Price $2.25, SD Catalog No. C13.10:286.



Approximate Conversions from Metric Measures

Symbol	When You Know	Multiply by	To Find	Symbol
		LENGTH		
mm	millimeters	0.04	inches	in
cm	centimeters	0.4	inches	in
m	meters	3.3	feet	ft
m	meters	1.1	yards	yd
km	kilometers	0.6	miles	mi
		AREA		
cm^2	square centimeters	0.16	square inches	in^2
m^2	square meters	1.2	square yards	yd^2
km^2	square kilometers	0.4	square miles	mi^2
ha	hectares (10,000 m^2)	2.5	acres	
		MASS (weight)		
g	grams	0.035	ounces	oz
kg	kilograms	2.2	pounds	lb
t	tonnes (1000 kg)	1.1	short tons	
		VOLUME		
ml	milliliters	0.03	fluid ounces	fl oz
l	liters	2.1	pints	pt
l	liters	1.06	quarts	qt
l	liters	0.26	gallons	gal
m^3	cubic meters	35	cubic feet	ft^3
m^3	cubic meters	1.3	cubic yards	yd^3
		TEMPERATURE (exact)		
°C	Celsius temperature	9/5 (then add 32)	Fahrenheit temperature	°F



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SECTION 1 - INTRODUCTION

1.1 PURPOSE AND SCOPE

The purpose of the Precedence Network (PN) is to generate scheduling information concerning activities necessary for the completion of a project so that management can monitor project progress, recognize otherwise unseen activity dependencies and allocate project resources in a manner optimal for completing a project in the minimal time. PN achieves this objective by utilizing critical path methods to analyze and compare both the static and dynamic network models describing a project and by producing output reports in a variety of formats to aid and inform all levels of management throughout the development process.

1.2 BACKGROUND INFORMATION

Use of the PN system requires the performance of two general activities associated with project management. These activities involve initially developing an initial network model, and secondly, periodically updating the model to reflect the current status of the project. Satisfying these requirements enables the PN system to provide the most accurate information possible, permitting the user to make interpretations and suggest courses of action.

The PN system has certain constraints concerning activity attributes that must be observed to ensure proper operation. These constraints are described as follows:

- Project activity capacity not to exceed 750
- Total predecessor capacity not to exceed 1000

- Maximum number of predecessors per activity not to exceed 99

Any other constraints that exist in PN are described in their appropriate section in this manual.

1.3 REFERENCES

The following documents may aid the PN user:

- IBM System/360 Operating System: Job Control Language Reference, IBM Systems Reference Library, GC28-6704.
- IBM System/360 Operating System: Fortran IV (G and H) Programmer's Guide, IBM Systems Reference Library, GC28-6817.

SECTION 2 - PROGRAM OPERATION

2.1 OVERVIEW

The Precedence Network consists of three main components which establish the network from the activity data, determine a schedule from estimated or actual start or completion dates and generate the various reports based on the calculated information. The nine possible reports in order of appearance are:

- Predecessor Network
- Successor Network
- Activity Schedule (relative)
- Activity Schedule (calendar form)
- Activity Completion Summary (estimates)
- Activity Completion Summary (actuals)
- Cumulative Activity Completion Plot
- Section Manager Summary
- Milestone Schedule

The first six reports are produced during every execution of PN while the last three reports are optional. The Activity Schedules may be generated from either the original schedule consisting of estimates only or from the current network composed of actuals when they are available.

SECTION 3 - PROGRAM INPUTS

3.1 CONTROL CARDS

Inputs to the Precedence Network System consist of control cards and activity data. Control cards direct the PN program to perform particular functions; activity cards define the network.

There are eight control cards that are used to determine the program options and provide input information. The format of each card and the program options associated with it are described below. All control cards have a fixed format.

3.1.1 Network Card

The Network Card is used to input information necessary to use any aspect of the system and is used unconditionally in conjunction with the Activity Completion Summary Card (Section 3.1.3). The information communicated by the Network Card includes the following:

- Network title
- Project start date
- Time scale
- Actuals/Estimates selection
- Section Manager Summary option
- Milestone Schedule option
- Current date
- Expected project completion date
- Cumulative activity completion plot option

The Network Card must always be the first control card in the input stream.

NETWORK CARD

COLUMN	CHAR TYPE	DESCRIPTION
1-40	AN	Title of output. Network title is a 40 character string.
41-46	N	Project start date in the form MMDDYY where: MM=month DD=day YY=year
47	N	Time-scale flag. This flag is used to indicate the units (days or weeks) associated with estimates on Activity Identification Card (Table 3-1). 1 - weeks 0 - days
48	N	Actuals option. This flag indicates whether the Activity Schedule (Sections 4.4 and 4.5) is determined from the initial network (estimates only) or current network (estimates and actuals). 0 - Estimate 1 - Actuals
49	N	Section Manager Summary option. 0 - Section Manager Summary (Section 4.9) not produced. 1 - Section Manager Summary (Section 4.9) produced.
50	N	Milestone Schedule option. 0 - Milestone schedule (Section 4.10) not produced. 1 - Milestone schedule (Section 4.10) produced.
51-56	N	Current date in the form MMDDYY where: MM=month DD=day YY=year
57-62	N	Expected project completion date in the form MMDDYY where: MM=month DD=day YY=year
63	N	Cumulative Activity Completion Plot option. 0 - Plot control card (Section 3.1.2) not read and Cumulative Activity Completion plot not produced. 1 - Plot control card (Section 3.1.2) read and Cumulative Activity Completion Plot (Section 4.7) produced.

3.1.2 Plot Card

This card contains two dates to be used by the plot generation module. The first date refers to the minimum of the interval that is to be plotted, while the second date refers to the maximum of the interval. This card should not be included in the input stream if the Cumulative Activity Completion Plot (Section 4.8) is not requested.

COLUMN	CHAR TYPE	DESCRIPTION
1-6	N	Plot interval minimum in the form of weeks after project start date, right-justified floating point.
8-13	N	Plot interval maximum in the form of weeks after project start date, right-justified floating point.

3.1.3 Activity Completion Summary Card

The Activity Completion Summary card is used to establish the interval in which completed activities are accumulated for both the Activity Completion Summary (estimates, Section 4.6) and Activity Completion Summary (actuals, Section 4.7). The card contains two dates and an increment value. The dates are used to specify the minimum and maximum of the time interval while the increment is used to partition the time interval into smaller segments so that the frequency of completed activities may be determined for each subinterval. There is an implied time unit of days or weeks associated with the increment value that is consistent with the time unit selected for the time scale flag on the Network Card (Section 3.1.1).

COLUMN	CHAR TYPE	DESCRIPTION
1-6	N	Activity Completion Summary (4.6 and 4.7) minimum in form MMDDYY where: MM = month DD = day YY = year
7-12	N	Activity Completion Summary (4.6 and 4.7) maximum in form MMDDYY where: MM = month DD = day YY = year
13-15	N	Increment value. In form X.Y where X and Y are decimal digits

3.1.4 Section Manager Summary Card - 1

The Section Manager Summary (Section 4.9) allows each activity to be broken into three categories. In the network input data, each category would be denoted by a unique number, the last digit of which is used to select the reporting category. This control card is one of four which affects the Section Manager Summary. If any of the four is provided by the user, all four must be provided.

COLUMN	CHAR TYPE	DESCRIPTION
1	N	Category-one. The value indicates that scheduling information concerning activities that end with that digit will appear in category one of the Section Manager Summary (Section 4.9).
2	N	Category-two. The value indicates that scheduling information concerning activities that end with that digit will appear in category two of the Section Manager Summary (Section 4.9).
3	N	Category-three. The value indicates that scheduling information concerning activities that end with that digit will appear in category three of the Section Manager Summary (Section 4.9).

3.1.5 Section Manager Summary Card - 2

The date on this card appears on the upper right corner of the Section Manager Summary (Section 4.9).

COLUMN	CHAR TYPE	DESCRIPTION
1-8	AN	Date of report in the form MM/DD/YY

3.1.6 Section Manager Summary Card - 3

This card is used to select report data and control pagination for the Section Manager Summary (Section 4.9). In the network raw data,each activity is identified by a five digit activity number. Using this control card, the user may specify up to five disjoint ranges of activity numbers to be reported on separately. Also, for each of these ranges, another parameter may be specified to control pagination within the range. This parameter gives the relative digit number within the activity number such that when the value of that digit changes, a page advance will occur.

COLUMN	CHAR TYPE	DESCRIPTION
1-5	N	Range one minimum
7-11	N	Range one maximum
13	N	Range one digit position for page advance
15-19	N	Range two minimum
21-25	N	Range two maximum
27	N	Range two digit position for page advance
29-33	N	Range three minimum
35-39	N	Range three maximum
41	N	Range three digit position for page advance

COLUMN	CHAR TYPE	DESCRIPTION
43-47	N	Range four minimum
49-53	N	Range four maximum
55	N	Range four digit position for page advance
57-61	N	Range five minimum
63-67	N	Range five maximum
69	N	Range five digit position for page advance

3.1.7 Section Manager Summary Card - 4

This card inputs the character strings used to denote headings at the top of each page in the Section Manager Summary (Section 4.9). Section 3.1.4 indicates how the categories are chosen.

COLUMN	CHAR TYPE	DESCRIPTION
1-16	AN	Category one heading. In the form of 16 character string.
17-32	AN	Category two heading. In the form of 16 character string.
33-48	AN	Category three heading. In the form of 16 character string.

3.1.8 Milestone Card

The Milestone Card communicates four items of information to the milestone generation module: the project start date, the milestone interval minimum, milestone interval maximum and a flag indicating the units associated with estimates on Activity Identification Card. The project start date on the Milestone Card is the same date that appears as the second item on the

Network Card (Section 3.1.1). The interval minimum and maximum select the activities that are represented on the Milestone Schedule (Section 4.10 The time scale flag on the Milestone Card indicates the units (days or weeks) that are associated with estimates on Activity Identification Card and is identical to the third item on the Network Card (Section 3.1.1).

COLUMN	CHAR TYPE	DESCRIPTION
1-6	N	Project start date in the form MMDDYY where: MM = month DD = day YY = year
7-12	N	Milestone interval minimum in the form MMDDYY where: MM = month DD = day YY = year
13-18	N	Milestone interval maximum in the form MMDDYY where: MM = month DD = day YY = year
19	N	Milestone time scale flag 1 - weeks 0 - days

3.2 DATA CARDS

There are four unique data cards used by PN to define each activity. Three of the four are required; the fourth is used to accomodate large numbers of predecessors. The first required card is the Activity Identification card. It gives activity name, number, and time required. Also provided are responsible individual/organization and scheduled start time. Generally, activities with predecessors are specified without a scheduled start time so that the network algorithm can compute a start time. If the start time is provided by the user, the network is forced to use it instead of a computed time. The card format is shown in Table 3-1.

The second mandatory card for an activity is the Activity Progress card and is used to record actual start and completion dates of the activity. The card format is shown in Table 3-2.

The third required card, the Activity Predecessor card, describes how many predecessors an activity has and provides space for eight predecessor designations. If there are less than eight predecessors, unused fields are ignored and should be omitted. If more than eight predecessors exist for an activity, the optional fourth card is used. The Activity Predecessor Continuation card allows space for eight predecessors. If less than eight are needed, the remaining spaces are ignored and may be omitted. If more than eight exist, additional Activity Predecessor Continuation cards are used. A maximum of 99 predecessors per activity is allowed by PN. The format of the Activity Predecessor cards is shown in Tables 3-3 and 3-4.

TABLE 3.1. Activity Identification Card

COLUMN	CHAR TYPE	DESCRIPTION
1	N	Card type identifier. This field must contain a numeric one.
3-8	N	Activity number in the range of (000000-999999).
10-25	AN	Activity name. A 16 character field in which the first six characters identify the activity, followed by a hyphen, followed by a maximum of nine characters describing the activity's function, i.e., SAMPLE-DSGN.
27-28	A	Responsible programmer initials. A two character field, i.e., MC
30-35	N	Activity completion estimate. Real valued number right justified, i.e., 2.1
37-42	N	Scheduled activity start date in the form MMDDYY where: MM = month DD = day YY = year; i.e.,040178

TABLE 3.2. Activity Progress Card

COLUMN	CHAR TYPE	DESCRIPTION
1	N	Card type identifier. This field must contain a numeric two.
3-8	N	Activity number in the range (000000-999999).
30-35	N	Actual start date in the form MMDDYY where: MM = month DD = day YY = year; i.e., 040178
37-42	N	Actual completion date in the form MMDDYY where: MM = month DD = day YY = year; i.e., 042078

TABLE 3.3. Activity Predecessor Card

COLUMN	CHAR TYPE	DESCRIPTION
1	N	Card type identifier. This field must contain a numeric three.
3-8	N	Activity number in the range (000000-999999)
10-11	N	Number of predecessors. (Integer value right justified); i.e., 10. Maximum of 99.
13-18	N	Predecessor one. Six digit activity number
20-25	N	Predecessor two. Six digit activity number
27-32	N	Predecessor three. Six digit activity number
34-39	N	Predecessor four. Six digit activity number
41-46	N	Predecessor five. Six digit activity number
48-53	N	Predecessor six. Six digit activity number
55-60	N	Predecessor seven. Six digit activity number
62-67	N	Predecessor eight. Six digit activity number

TABLE 3.4. Activity Predecessor Continuation Card

COLUMN	CHAR TYPE	DESCRIPTION
1	N	Card type identifier. This field must contain a numeric four.
13-18	N	Next predecessor.
20-25	N	Next predecessor.
27-32	N	Next predecessor.
34-39	N	Next predecessor.
41-46	N	Next predecessor.
48-53	N	Next predecessor.
55-60	N	Next predecessor.
62-67	N	Next predecessor.

3.3 DATA SETS

PN uses the following data sets:

- PN network input raw data set
- Section Manager Summary input data set
- Milestone Schedule input data set
- PN output data set
- PN control card input data set

3.3.1 PN Network Input Raw Data Set

DDNAME FT09F001 specifies the network activity information and must be in the form of a physical sequential data set with a logical record length of 80 bytes. The block size may be varied by the user. Record format is described in Section 3.2.

3.3.2 Section Manager Summary Input Data Set

DDNAME FT12F001 specifies the information used as input data to the module generating the Section Manager Summary (Section 4.9), and is in the form of a sequential data set. Logical data records are 105 bytes long and can be blocked by the user. An example of how to specify the Section Manager Summary input data set follows:

```
//FT12F001  DD  DSN=&&TMSMR,DISP=(NEW,PASS,DELETE),
//            SPACE=(TRK,20),UNIT=SYSDA,DCB=(RECFM=FB,BLKSIZE=105)
```

This data set is created by PN and requires no specific user input.

3.3.3 Milestone Schedule Input Data Set

DDNAME FT13F001 specifies information necessary to generate the Milestone Schedule (Section 4.10). Logical data records are of variable length and can be blocked by the user. An example of how to specify this data set follows:

```
//FT13F001  DD  DSN=&&TMMLN,DISP=(NEW,PASS,DELETE),
//    SPACE=(TRK,20),UNIT=SYSDA,DCB=(RECFM=VB,BLKSIZE=3508)
```

This data set is generated by PN and requires no specific user input.

3.3.4 PN Output Data Set

DDNAME FT06F001 is used for print. Logical data records may be blocked and are 133 bytes in length using ASA control characters.

3.3.5 PN Control Card Input Data Set

DDNAME FT05F001 specifies PN input control cards. Logical record length is 80 bytes and may be blocked by the user.

3.4 JOB CONTROL LANGUAGE

The following is a sample of PN JCL including control cards:

```
// EXEC PGM=MLCPM,REGION=450K
//STEPLIB DD DSN=TM.LOADLIB,DISP=SHR
//FT09F001 DD DSN=TM.RAWDATA(WORKBLD4),LABEL=(,,,IN),DISP=SHR
//FT12F001 DD DSN=&&TMSMR,DISP=(NEW,PASS,DELETE),
// SPACE=(TRK,20),UNIT=SYSDA,DCB=(RECFM=FB,BLKSIZE=105)
//FT13F001 DD DSN=&&TMMLN,DISP=(NEW,PASS,DELETE),
// SPACE=(TRK,20),UNIT=SYSDA,DCB=(RECFM=VS,BLKSIZE=48)
//FT06F001 DD SYSOUT=A
//FT05F001 DD *
 BUILD IV REFDATE: 04/01/78              040178111109197809027 81
  9.0  31.0
0401781103781.0
123
09/19/78
00000 30000 4 30001 99999 3
    DESIGN            CODE            TEST
0401780401780809781
/*
```

An explanation of the options specified on the control cards in the above example is provided below. Descriptions are in the order in which they appear in the input stream.

The Network card is composed of the following fields:

- (Build IV REFDATE: 04/01/78) appears in the Network title
- (040178) project start date
- (1) timescale flag (estimates expressed in weeks)
- (1) actuals option (schedule determined from current network)
- (1) Section Manager Summary option (report generated)
- (1) Milestone schedule option (report generated)
- (091978) Current date

- (090278) expected project completion date
- (1) Cumulative Activity Plot option (report generated)

The plot card consists of two fields:

- (9.0) interval minimum is nine weeks beyond project start date
- (31.0) interval maximum is thirty-one weeks beyond project start date

The Activity Completion Summary Card consists of the following:

- (040178) interval minimum
- (110378) interval maximum
- (1.0) subinterval size

The Section Manager Summary Card-1 contains three fields:

- (1) activities ending with this digit will be displayed in the Section Manager Summary and Milestone Schedule
- (2) activities ending with this digit will be displayed in the Section Manager Summary and Milestone Schedule
- (3) activities ending with this digit will be displayed in the Section Manager Summary and Milestone Schedule

The Section Manager Summary Card-2 is composed of only one item:

- (09/19/78) date of report

The Section Manager Summary Card-3 consists of the following:

- (00000 30000 4) pagination will occur when the fourth digit from right changes value within the specified interval.
- (30001 99999 3) pagination will occur when the third digit from right changes value within the specified interval.

The Section Manager Card-4 is composed of three items:

- (DESIGN) appears above category 1 in Section Manager Summary
- (CODE) appears above category 2 in Section Manager Summary
- (TEST) appears above category 3 in Section Manager Summary

The Milestone Card consists of the following items:

- (040178) project start date
- (040178) Milestone interval minimum
- (080978) Milestone interval maximum
- (1) timescale flag consistent with timescale flag on network card

SECTION 4 - PROGRAM OUTPUTS

4.1 OVERVIEW

PN generates the following reports:

- Predecessor Network
- Successor Network
- Activity Schedule (relative)
- Activity Schedule (actual)
- Activity Completion Summary (estimates)
- Activity Completion Summary (actuals)
- Cumulative Activity Completion Plot
- Section Manager Summary
- Milestone Schedule

PN produces six reports unconditionally in all modes of operation. These include: Predecessor Network (Section 4.2); Successor Network (Section 4.3); Activity Schedule (relative, Section 4.4); Activity Schedule (actual, Section 4.5); Activity Completion Summary (estimates, Section 4.6); Activity Completion Summary (actuals, Section 4.7). Those generated by user option are: Activity Completion Plot (Section 4.8); Section Manager Summary (Section 4.9); and Milestone Schedule (Section 4.10).

4.2 PREDECESSOR NETWORK

The Predecessor Network is a listing of the project network sorted in ascending order by activity ID. Each activity ID has an associated activity name, estimated time for activity completion, the user-imposed

start time and the activity IDs of its immediate predecessors. Refer to Figure 4-1.

4.3 SUCCESSOR NETWORK

The Successor Network is a list of the project network sorted in ascending order by activity ID. Each activity ID has an associated activity name, estimated time for activity completion, the user-imposed start time and the activity IDs of its immediate successors. Refer to Figure 4-2.

4.4 ACTIVITY SCHEDULE (RELATIVE)

The Activity Schedule (Relative) is a summary of network activities in ascending order by completion time. This report contains the following information for each of the project activities (refer to Figure 4-3):

a. Activity name

b. Activity ID

c. Estimated time for activity completion

d. Scheduled start time for the activity (displaced from project start date)

e. Scheduled completion time for the activity (displaced from project start date)

f. Latest completion time (displaced from project start date); the latest possible time the activity can be completed without impacting the user-supplied project completion date

g. Slack to expected completion date; the difference between the latest completion time (f) and the scheduled completion time (e). Positive slack indicates the bounds within which the completion

PRECEDENCE NETWORK

ACTIVITY NAME	ACTIVITY	ESTIMATE	START TIME	PREDECESSORS
TBCPIN-DSGN	214101	1.0	0.0	214061
TBCPIN-CODE	214102	1.0	0.0	214101
TBCPIN-TEST	214103	3.0	0.0	214102
TBCPCT-DSGN	214111	1.0	0.0	214061
TBCPCT-CODE	214112	1.0	0.0	214111
TBCPCT-TEST	214113	2.0	0.0	214112
TBCPIC-DSGN	214121	2.0	0.0	214061
TBCPIC-CODE	214122	1.0	0.0	214121
TBCPIC-TEST	214123	3.0	0.0	214122
TBINPM-DSGN	214131	2.0	0.0	214061
TBINPM-CODE	214132	1.0	0.0	214131
TBINPM-TEST	214133	2.0	0.0	214132
TBFECS-CODE	214142	1.0	0.0	214061
TBFECS-TEST	214143	1.0	0.0	214142
TBICCP-COMPLETE	214151	0.0	0.0	214103 214113 214123 214133 214143
TBFINI-CODE	214502	1.0	15.3	
TBFINI-TEST	214503	1.0	0.0	214502
TBFECM-DSGN	214511	1.0	15.3	
TBFECM-CODE	214512	1.0	0.0	214511
TBFECM-TEST	214513	1.0	0.0	214512
TESVCS-TEST	214523	0.0	0.0	214013 214023 214033 214043 214053
TESTLP-TEST	214533	0.0	0.0	214503 214513
TBELC←COMPLETE	214713	0.0	0.0	214151 214523 214533
MASMFS-DSGN	215011	2.0	14.3	
MASMPS-CODE	215012	1.0	0.0	215011 215023
MASMFS-TEST	215013	1.0	0.0	215012
MAEACT-TEST	215023	1.0	0.0	322080
MAICCE-CODE	215032	1.0	15.3	
MAICCE-TEST	215033	2.0	0.0	215032
MARLPS-DSGN	215041	1.0	17.3	
MARLPS-CODE	215042	1.0	0.0	215041
MARLPS-TEST	215043	2.0	0.0	211603 213003 215042
MASLPS-CODE	215062	3.0	15.3	
MASLPS-TEST	215063	1.0	0.0	215062
MACPPS-DSGN	215071	1.0	17.3	
MACPPS-CODE	215072	1.0	0.0	215071
MACPPS-TEST	215073	1.0	0.0	215072
MATCTS-DSGN	215081	1.0	15.3	
MATCTS-CODE	215082	1.0	0.0	215081
MATCTS-TEST	215083	2.0	0.0	215082
MAEPTS-CODE	215102	1.0	20.3	
MAEPTS-TEST	215103	1.0	0.0	215082 215102
EXIAT4-INTEGRATE	219993	2.0	0.0	210053 210343 210503 210613 210703 210743 210753 210763 210783 210973 211063 211353 211373 211383 211393 211993 211523 211573 211583 211603 211743 211753 211763 211773 211893 211903 211913 211923 211933 211943 211953 211963 211973 211983 212003

Figure 4-1. Precedence Network

SUCCESSOR NETWORK

ACTIVITY NAME	ACTIVITY	ESTIMATE	START TIME	SUCCESSORS
APFPSC-TEST	240973	1.0	0.0	249999
APFREC-DSGN	240981	2.0	13.0	240982
APFREC-CODE	240982	1.0	0.0	240983
APFREC-TEST	240983	1.0	0.0	
APSSEA-DSGN	240991	2.0	13.0	240971 240992
APSSEA-CODE	240992	1.0	0.0	240993
APSSEA-TEST	240993	1.0	0.0	240973
APSLPC-DSGN	241001	2.0	13.0	241002
APSLPC-CODE	241002	1.0	0.0	241003
APSLPC-TEST	241003	1.0	0.0	249999
APCFRP-TEST	241093	1.0	13.0	240833 240843
APCILP-DSGN	241101	2.0	0.0	241102
APCILP-CODE	241102	1.0	0.0	241103
APCILP-TEST	241103	1.0	0.0	249999
AP BLD4 COMPLETE	249999	0.0	0.0	999999
DELIVER TO EX	322080	0.0	16.3	215023 323999
SC SUBSYSTEM	323999	0.0	0.0	999999
CAMERC-DSGN	324221	1.5	0.0	324222
CAMERC-CODE	324222	0.7	0.0	324223
CAMERC-TEST	324223	1.5	0.0	329999
CACMFR-DSGN	324231	3.5	17.4	324232
CACMFR-CODE	324232	1.0	0.0	324233
CACMFR-TEST	324233	2.0	0.0	329999
CASCRT-DSGN	324621	2.0	17.4	324622
CASCRT-CODE	324622	1.0	0.0	324623
CASCRT-TEST	324623	2.0	0.0	329999
CAMRCE-DSGN	324761	0.0	19.6	324762
CAMRCE-CODE	324762	1.0	0.0	324763
CAMRCE-TEST	324763	2.0	0.0	
CATERM-DSGN	324771	1.0	16.4	324772
CATERM-CODE	324772	0.5	0.0	324773
CATERM-TEST	324773	0.5	0.0	329999
CACFCL-DSGN	324781	2.0	17.4	324782
CACFCL-CODE	324782	1.0	0.0	324783
CACFCL-TEST	324783	1.0	0.0	329999
CABLD4-COMPLETE	329999	0.0	0.0	999999
JA-TEST-EXEC	331050	16.0	5.0	331999
JA-ANALYZER	331060	12.0	9.0	331999
JA-PRCC-BLD4	331100	8.0	13.0	331999
JA-CIF-INST	331110	8.0	13.0	331999
JA-BLD4-COMPLETE	331999	0.0	0.0	999999
RA-CE-ANALYSIS	341000	7.0	2.0	341411 341441 341451 341461 341471 341481 341491 341501 341551
RACCEA-DESN	341411	2.0	13.6	341412
RACCEA-CODE	341412	1.0	0.0	341413
RACCEA-TEST	341413	1.0	0.0	341999

Figure 4-2. Successor Network

ACTIVITY SCHEDULE 9/19/78
(ACTUAL)

ACTIVITY NAME	ACTIVITY	ESTIMATE	INITIATION	COMPLETION TIME	LATEST COMPLETION TIME	TIME TO 9/19/78	SLACK TO 9/ 2/78
SIFCTL-DSGN	230231	1.4	7.0 ACTUAL	8.4 ACTUAL	16.0	-16.0	7.6
SIFCLY-DSGN	230241	1.4	7.0 ACTUAL	8.4 ACTUAL	15.9	-16.0	7.4
SIFRCP-DSGN	230401	1.6	7.1 ACTUAL	8.7 ACTUAL	3.4	-15.7	-5.3
SIPRCF-DSGN	230471	1.6	7.1 ACTUAL	8.7 ACTUAL	15.4	-15.7	6.7
RA-DE-ANALYSIS	341000	0.0	8.9 ACTUAL	8.9 ACTUAL	11.9	-15.6	3.0
SIFCTL-CODE	230232	1.0	9.3 ACTUAL	10.3 ACTUAL	17.0	-14.1	6.7
SIFCLY-CODE	230242	1.1	9.3 ACTUAL	10.4 ACTUAL	17.0	-14.0	6.6
PNMAIN-DESGN	343011	0.3	10.3 ACTUAL	10.6 ACTUAL	21.7	-13.9	11.1
SIFRCP-CODE	230402	1.4	9.3 ACTUAL	10.7 ACTUAL	4.9	-13.7	-5.9
PNCNTL-DESGN	343021	0.1	10.6 ACTUAL	10.7 ACTUAL	21.7	-13.7	11.0
PNTITL-DESGN	343031	0.0	10.7 ACTUAL	10.7 ACTUAL	22.0	-13.7	11.3
SIPRCF-CODE	230472	1.6	9.3 ACTUAL	10.9 ACTUAL	17.0	-13.6	6.1
PNPROX-DESGN	343051	0.0	10.9 ACTUAL	10.9 ACTUAL	21.0	-13.6	10.1
PNREDX-DESGN	343041	0.1	11.0 ACTUAL	11.1 ACTUAL	22.0	-13.3	10.9
RACNNR-DESN	341551	2.3	9.0 ACTUAL	11.3 ACTUAL	17.4	-13.1	6.1
RACCMP-DESN	341471	2.3	9.0 ACTUAL	11.3 ACTUAL	19.0	-13.1	7.7
RACCDB-DESN	341491	2.3	9.0 ACTUAL	11.3 ACTUAL	18.4	-13.1	7.1
PNSAVE-DESGN	343181	0.0	11.3 ACTUAL	11.3 ACTUAL	22.0	-13.1	10.7
RAFCER-DESN	341501	2.4	9.0 ACTUAL	11.4 ACTUAL	18.9	-13.0	7.4
PNINDX-DESGN	343071	0.1	11.3 ACTUAL	11.4 ACTUAL	22.0	-13.0	10.6
RADESR-DESN	341481	2.4	9.0 ACTUAL	11.4 ACTUAL	20.0	-13.0	8.6
PNCRTN-DESGN	343191	0.0	11.4 ACTUAL	11.4 ACTUAL	22.0	-13.0	10.6
PNACS-DESGN	343301	0.3	11.1 ACTUAL	11.4 ACTUAL	22.0	-13.0	10.6
PNCASA-DESGN	343121	0.1	11.6 ACTUAL	11.7 ACTUAL	22.0	-12.7	10.3
PNPREC-DESGN	343061	0.1	11.9 ACTUAL	12.0 ACTUAL	22.0	-12.4	10.0
PNCBAS-DESGN	343131	0.1	12.3 ACTUAL	12.4 ACTUAL	22.0	-12.0	9.6
SIMLGN-INTF	230420	0.0	12.6 ACTUAL	12.6 ACTUAL	15.9	-11.9	3.3
PNPSLC-DESGN	343091	0.1	12.4 ACTUAL	12.6 ACTUAL	22.0	-11.9	9.4
PNCLTE-DESGN	343101	0.0	12.6 ACTUAL	12.6 ACTUAL	21.7	-11.9	9.1
SIZADC-INTF	230430	0.0	12.6 ACTUAL	12.6 ACTUAL	15.9	-11.9	3.3
APTYPE-DSGN	240881	2.4	10.4 ACTUAL	12.9 ACTUAL	19.3	-11.6	6.4
PNCLT-DESGN	343111	0.1	12.7 ACTUAL	12.9 ACTUAL	21.9	-11.6	9.0
PNSECT-DESGN	343141	0.0	12.9 ACTUAL	12.9 ACTUAL	22.0	-11.6	9.1
PNSMS-DESGN	343151	0.0	13.3 ACTUAL	13.3 ACTUAL	22.0	-11.1	8.7
PNWAS1-DESGN	343161	0.0	13.3 ACTUAL	13.3 ACTUAL	22.0	-11.1	8.7
PNCPK-DESGN	343201	0.0	13.3 ACTUAL	13.3 ACTUAL	22.0	-11.1	8.7
PNSLEA-DESGN	343211	0.0	13.3 ACTUAL	13.3 ACTUAL	22.0	-11.1	8.7
PNST-DESGN	343221	0.0	13.3 ACTUAL	13.3 ACTUAL	22.0	-11.1	8.7
DNWAS2-DESGN	343171	0.0	13.3 ACTUAL	13.3 ACTUAL	22.0	-11.1	8.7
PNPSLN-DESGN	343251	0.0	13.4 ACTUAL	13.4 ACTUAL	22.0	-11.0	8.6
PNINST-DESGN	343241	0.1	13.3 ACTUAL	13.4 ACTUAL	22.0	-11.0	8.6
SIZADC-DSGN	230431	1.0	12.6 ACTUAL	13.6 ACTUAL	20.0	-10.9	6.4
PNSTEN-DESGN	343261	0.1	13.4 ACTUAL	13.6 ACTUAL	22.0	-10.9	8.4
PNMLHD-DESGN	343271	0.0	13.6 ACTUAL	13.6 ACTUAL	22.0	-10.9	8.4
SIMLGN-DSGN	230421	1.0	12.6 ACTUAL	13.6 ACTUAL	20.0	-10.9	6.4

Figure 4-3. Activity Schedule - Relative

of the activity may fall without impacting the expected project completion date. Negative slack indicates that the scheduled completion time is inadequate for the user-supplied project completion date.

h. Time to current date (report date);the difference between the scheduled completion time and the current date (report date)

The Activity Schedule (relative) may be executed in one of two modes. The first mode determines values for the items in this report based on the initial network consisting of estimates only. The second mode calculates item values based on the current network consisting of estimates and actuals (if available). When the Activity Schedule (relative) is being executed in first mode, the word "estimate" will appear in parentheses beneath the page title of each page in this report. If the report is being generated in the second mode, the word "actual" will appear in parentheses beneath the page title as well as adjacent to the activity attribute for which actual data has been supplied. For instance, actual start time will be substituted for estimated start time and actual completion time will replace estimated completion time.

4.5 ACTIVITY SCHEDULE (ACTUAL)

This report is identical to the Activity Schedule (relative, Section 4.4) except that the scheduled start time (d), scheduled completion time (e), and latest completion time (f) values are expressed in month, day, year format rather than relative displacements. Refer to Figure 4-4.

ACTIVITY SCHEDULE 9/19/78
(ACTUAL)

ACTIVITY NAME	ACTIVITY	ESTIMATE	INITIATION	COMPLETION TIME	LATEST COMPLETION TIME	TIME TO 9/19/78	SLACK TO 9/ 2/78
SIFCTL-CSCN	230231	1.4	5/20/78 ACTUAL	5/30/78 ACTUAL	7/22/78	-16.0	7.6
SIFCLY-CSCN	230241	1.4	5/20/78 ACTUAL	5/30/78 ACTUAL	7/21/78	-16.0	7.4
SIFRCP-CSCN	230401	1.6	5/21/78 ACTUAL	6/ 1/78 ACTUAL	4/25/78	-15.7	-5.3
SIPRCF-CSCN	230471	1.6	5/21/78 ACTUAL	6/ 1/78 ACTUAL	7/18/78	-15.7	6.7
RA-CE-ANALYSIS	341000	3.0	6/ 2/78 ACTUAL	6/ 2/78 ACTUAL	6/23/78	-15.6	3.0
SIFCTL-CCCE	230232	1.0	6/ 5/78 ACTUAL	6/12/78 ACTUAL	7/29/78	-14.1	6.7
SIFCLY-CCCE	230242	1.1	6/ 5/78 ACTUAL	6/13/78 ACTUAL	7/29/78	-14.0	6.6
PNMAIN-CESCN	343011	3.3	6/12/78 ACTUAL	6/14/78 ACTUAL	8/31/78	-13.9	11.1
SIFRCP-CCCE	230402	1.4	6/ 5/78 ACTUAL	6/15/78 ACTUAL	5/ 5/78	-13.7	-5.9
PNCNTL-CESCN	343021	0.1	6/14/78 ACTUAL	6/15/78 ACTUAL	8/31/78	-13.7	11.0
PNTITL-CESCN	343031	0.0	6/15/78 ACTUAL	6/15/78 ACTUAL	9/ 2/78	-13.7	11.3
SIPRCF-CCCE	230472	1.6	6/ 5/78 ACTUAL	6/16/78 ACTUAL	7/29/78	-13.6	6.1
PNPROX-CESCN	343051	0.0	6/16/78 ACTUAL	6/16/78 ACTUAL	8/26/78	-13.6	10.1
PNREDX-CESCN	343041	0.1	6/17/78 ACTUAL	6/18/78 ACTUAL	9/ 2/78	-13.3	10.9
RACNNR-CESA	341551	2.3	6/ 3/78 ACTUAL	6/19/78 ACTUAL	8/ 1/78	-13.1	6.1
RACCMF-CESA	341471	2.3	6/ 3/78 ACTUAL	6/19/78 ACTUAL	8/12/78	-13.1	7.7
RACCCB-CESA	341491	2.3	6/ 3/78 ACTUAL	6/19/78 ACTUAL	8/ 8/78	-13.1	7.1
PNSAVE-CESCN	343181	0.0	6/19/78 ACTUAL	6/19/78 ACTUAL	9/ 2/78	-13.1	10.7
RAFCER-CESA	341501	2.4	6/ 3/78 ACTUAL	6/20/78 ACTUAL	8/11/78	-13.0	7.4
PNINCA-CESCN	343071	0.1	6/19/78 ACTUAL	6/20/78 ACTUAL	9/ 2/78	-13.0	10.6
RADESR-CESA	341481	2.4	6/ 3/78 ACTUAL	6/20/78 ACTUAL	8/19/78	-13.0	8.6
PNDATN-CESCN	343191	0.0	6/20/78 ACTUAL	6/20/78 ACTUAL	9/ 2/78	-13.0	10.6
PNACS-CESCN	343301	0.3	6/18/78 ACTUAL	6/20/78 ACTUAL	9/ 2/78	-13.0	10.6
PNCASA-CESCN	343121	0.1	6/21/78 ACTUAL	6/22/78 ACTUAL	9/ 2/78	-12.7	10.3
PNPREC-CESCN	343061	0.1	6/23/78 ACTUAL	6/24/78 ACTUAL	9/ 2/78	-12.4	10.0
PNCBAS-CESCN	343131	0.1	6/26/78 ACTUAL	6/27/78 ACTUAL	9/ 2/78	-12.0	9.6
SIMLCA-INTF	230420	0.0	6/28/78 ACTUAL	6/28/78 ACTUAL	7/21/78	-11.9	3.3
PNPSLC-CESCN	343091	0.1	6/27/78 ACTUAL	6/28/78 ACTUAL	9/ 2/78	-11.9	9.4
PNCLTE-CESCN	342101	0.0	6/28/78 ACTUAL	6/28/78 ACTUAL	8/31/78	-11.9	9.1
SIZADC-INTF	230430	3.0	6/28/78 ACTUAL	6/28/78 ACTUAL	7/21/78	-11.9	3.3
APTYPE-CSCN	240881	2.4	6/13/78 ACTUAL	6/30/78 ACTUAL	8/14/78	-11.6	6.4
PNCLT-CESCN	343111	0.1	6/29/78 ACTUAL	6/30/78 ACTUAL	9/ 1/78	-11.6	9.0
PNSBCT-CESCN	343141	0.0	6/30/78 ACTUAL	6/30/78 ACTUAL	9/ 2/78	-11.6	9.1
PASMS-CESCN	343151	0.0	7/ 3/78 ACTUAL	7/ 3/78 ACTUAL	9/ 2/78	-11.1	8.7
PNMAS1-CESCN	343161	0.0	7/ 3/78 ACTUAL	7/ 3/78 ACTUAL	9/ 2/78	-11.1	8.7
PACHK-CESCN	343201	0.0	7/ 3/78 ACTUAL	7/ 3/78 ACTUAL	9/ 2/78	-11.1	8.7
PNSUBA-CESCN	343211	0.0	7/ 3/78 ACTUAL	7/ 3/78 ACTUAL	9/ 2/78	-11.1	8.7
PAST-CESCN	343221	0.0	7/ 3/78 ACTUAL	7/ 3/78 ACTUAL	9/ 2/78	-11.1	8.7
CNMAS2-CESCN	343171	0.0	7/ 3/78 ACTUAL	7/ 3/78 ACTUAL	9/ 2/78	-11.1	8.7
PAPSLA-CESCN	343251	0.0	7/ 4/78 ACTUAL	7/ 4/78 ACTUAL	9/ 2/78	-11.0	8.6
PAIAST-CESCN	343241	0.1	7/ 3/78 ACTUAL	7/ 4/78 ACTUAL	9/ 2/78	-11.0	8.6
SIZADC-CSCN	230431	1.0	6/28/78 ACTUAL	7/ 5/78 ACTUAL	8/19/78	-10.9	6.4
PNSTEA-CESCN	343261	0.1	7/ 4/78 ACTUAL	7/ 5/78 ACTUAL	9/ 2/78	-10.9	8.4
PAMLHD-CESCN	343271	0.0	7/ 5/78 ACTUAL	7/ 5/78 ACTUAL	9/ 2/78	-10.9	8.4
SIMLCA-DSCN	230421	1.0	6/28/78 ACTUAL	7/ 5/78 ACTUAL	8/19/78	-10.9	6.4

Figure 4-4. Activity Schedule - Actual

4.6 ACTIVITY COMPLETION SUMMARY (ESTIMATES)

This report displays in tabular form the frequency and cumulative frequency of scheduled activity completions determined from estimates for all ten activity types over a given user-specified interval. Refer to Figure 4-5.

4.7 ACTIVITY COMPLETION SUMMARY (ACTUALS)

This report is identical to the Activity Completion Summary (estimates) except that the frequency and cumulative frequencies are determined from scheduled activity completions based on estimates and actual start of completion times rather than estimates alone. Refer to Figure 4-6.

4.8 CUMULATIVE ACTIVITY COMPLETION PLOT

This report plots curves for cumulative frequencies comparing a) scheduled completions based on estimates, and b) scheduled completions based on estimates and actual start and completion times, on the same Cartesian graph over a user-specified interval for each of the ten activity types. One activity type is plotted per page. If no estimate or actual data is available for a given activity type, a plot for that type will not appear and a message will be generated to indicate the absence of data. Refer to Figure 4-7.

ESTIMATE
COMPLETION SCHEDULE SUMMARY
FOR THE PERIOD 4/ 1/78 11/ 3/78

	FREQ 0	CUM 0	FREQ 1	CUM 1	FREQ 2	CUM 2	FREQ 3	CUM 3	FREQ 4	CUM 4	FREQ 5	CUM 5	FREQ 6	CUM 6	FREQ 7	CUM 7	FREQ 8	CUM 8	FREQ 9	CUM 9
4/ 7/78	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4/14/78	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4/21/78	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4/28/78	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5/ 5/78	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5/12/78	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5/19/78	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5/26/78	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/ 2/78	1	1	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/ 9/78	0	1	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/16/78	0	1	4	8	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/23/78	0	1	11	19	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/30/78	2	3	7	26	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7/ 7/78	0	3	15	41	5	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7/14/78	0	3	10	51	8	17	2	2	0	0	0	0	0	0	0	0	0	0	0	0
7/21/78	0	3	5	56	30	47	24	26	0	0	0	0	0	0	0	0	0	0	0	0
7/28/78	1	4	21	77	7	54	13	39	0	0	0	0	0	0	0	0	0	0	1	1
8/ 4/78	0	4	16	93	27	81	17	56	0	0	0	0	0	0	0	0	0	0	0	1
8/11/78	0	4	15	108	16	97	20	76	0	0	0	0	0	0	0	0	0	0	1	2
8/18/78	0	4	12	120	19	116	15	91	0	0	0	0	0	0	0	0	0	0	0	2
8/25/78	0	4	5	125	11	127	12	103	0	0	0	0	0	0	0	0	0	0	0	2
9/ 1/78	4	8	5	130	7	134	18	121	0	0	0	0	0	0	0	0	0	0	1	3
9/ 8/78	0	8	5	135	16	150	13	134	0	0	0	0	0	0	0	0	0	0	0	3
9/15/78	0	8	4	139	10	160	11	145	0	0	0	0	0	0	0	0	0	0	1	4
9/22/78	0	8	3	142	2	162	9	154	0	0	0	0	0	0	0	0	0	0	0	4
9/29/78	0	8	0	142	1	163	13	167	0	0	0	0	0	0	0	0	0	0	3	7
10/ 6/78	0	8	0	142	0	163	1	168	0	0	0	0	0	0	0	0	0	0	0	7
10/13/78	0	8	0	142	2	165	3	171	0	0	0	0	0	0	0	0	0	0	0	7
10/20/78	0	8	0	142	0	165	9	180	0	0	0	0	0	0	0	0	0	0	2	9
10/27/78	0	8	0	142	0	165	1	181	0	0	0	0	0	0	0	0	0	0	0	9
TOTALS		8		142		165		181		0		0		0		0		0		9

Figure 4-5. Estimate Completion Schedule Summary

ACTUALS
COMPLETION SCHEDULE SUMMARY
FOR THE PERIOD 4/ 1/78 11/ 3/78

	FREQ 0	CUM 0	FREQ 1	CUM 1	FREQ 2	CUM 2	FREQ 3	CUM 3	FREQ 4	CUM 4	FREQ 5	CUM 5	FREQ 6	CUM 6	FREQ 7	CUM 7	FREQ 8	CUM 8	FREQ 9	CUM 9
4/ 7/78	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4/14/78	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4/21/78	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4/28/78	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5/ 5/78	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5/12/78	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5/19/78	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5/26/78	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/ 2/78	1	1	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/ 9/78	0	1	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/16/78	0	1	4	8	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/23/78	0	1	11	19	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6/30/78	2	3	7	26	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7/ 7/78	0	3	15	41	5	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7/14/78	0	3	10	51	8	17	2	2	0	0	0	0	0	0	0	0	0	0	0	0
7/21/78	0	3	5	56	30	47	24	26	0	0	0	0	0	0	0	0	0	0	0	0
7/28/78	1	4	21	77	7	54	13	39	0	0	0	0	0	0	0	0	0	0	0	0
8/ 4/78	0	4	16	93	27	81	17	56	0	0	0	0	0	0	0	0	0	0	0	0
8/11/78	0	4	15	108	16	97	20	76	0	0	0	0	0	0	0	0	0	0	0	0
8/18/78	0	4	12	120	19	116	15	91	0	0	0	0	0	0	0	0	0	0	0	0
8/25/78	0	4	5	125	11	127	12	103	0	0	0	0	0	0	0	0	0	0	0	0
9/ 1/78	0	4	5	130	7	134	18	121	0	0	0	0	0	0	0	0	0	0	0	0
9/ 8/78	0	4	5	135	16	150	13	134	0	0	0	0	0	0	0	0	0	0	0	0
9/15/78	0	4	4	139	10	160	12	146	0	0	0	0	0	0	0	0	0	0	0	0
9/22/78	0	4	3	142	2	162	10	156	0	0	0	0	0	0	0	0	0	0	0	0
9/29/78	0	4	0	142	1	163	14	170	0	0	0	0	0	0	0	0	0	0	0	0
10/ 6/78	0	4	0	142	0	163	1	171	0	0	0	0	0	0	0	0	0	0	0	0
10/13/78	0	4	0	142	2	165	1	172	0	0	0	0	0	0	0	0	0	0	0	0
10/20/78	0	4	0	142	0	165	11	183	0	0	0	0	0	0	0	0	0	0	0	0
10/27/78	0	4	0	142	0	165	1	184	0	0	0	0	0	0	0	0	0	0	0	0
TOTALS		4		142		165		184		0		0		0		0		0		0

Figure 4-6. Actuals Completion Schedule Summary

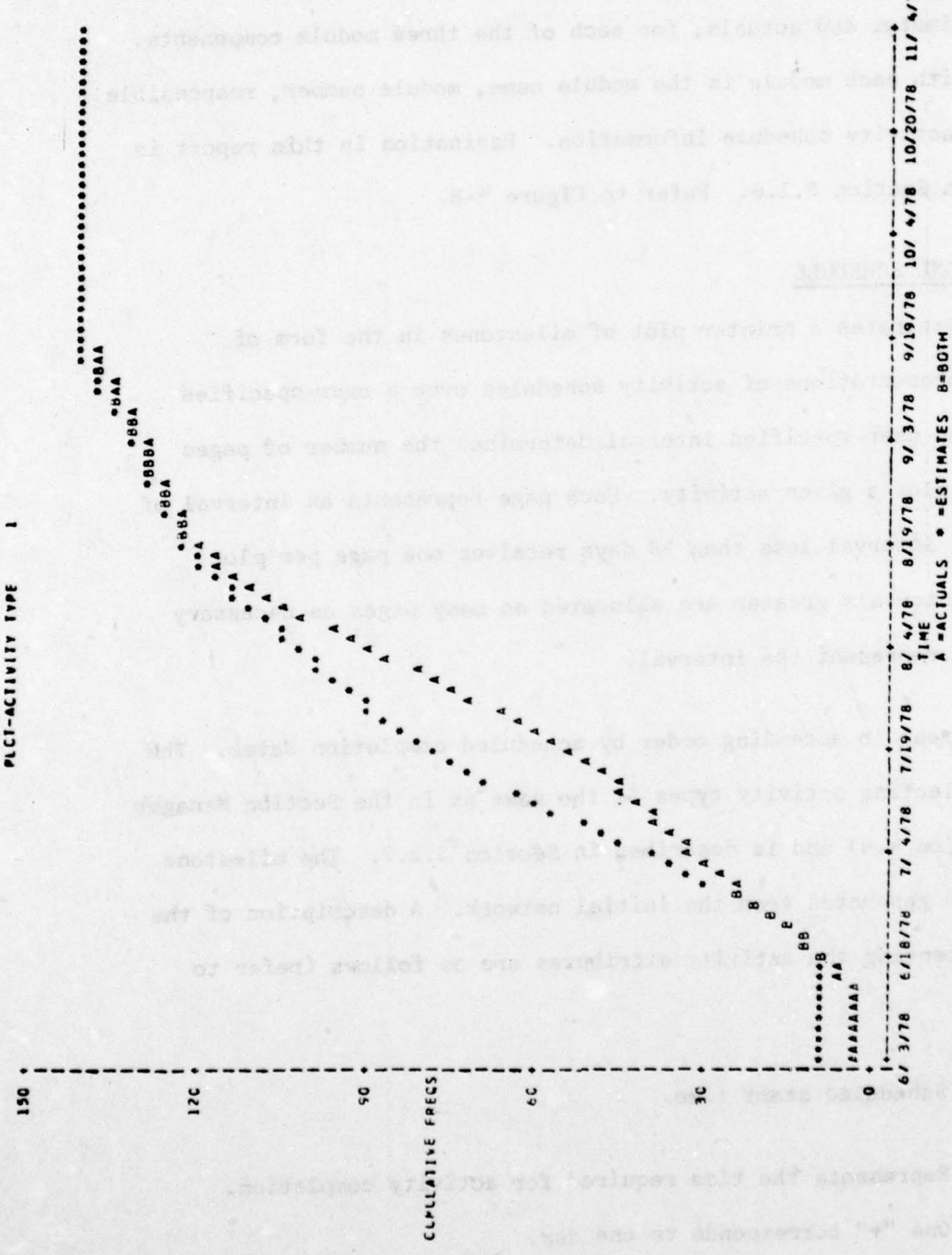

Figure 4-7. Plot - Activity Type

4.9 SECTION MANAGER SUMMARY

The Section Manager Summary displays, by ascending order of module number, the three user-specified activity types in tabular form, providing start and completion times based on estimates, and start and completion times based on estimates and actuals, for each of the three module components. Associated with each module is the module name, module number, responsible agency, and activity schedule information. Pagination in this report is as defined in Section 3.1.6. Refer to Figure 4-8.

4.10 MILESTONE SCHEDULE

This report generates a printer plot of milestones in the form of graphical representations of activity schedules over a user-specified interval. The user-specified interval determines the number of pages allocated to plot a given activity. Each page represents an interval of 98 days. Any interval less than 98 days receives one page per plot while those intervals greater are allocated as many pages as necessary to completely represent the interval.

Activities appear in ascending order by scheduled completion dates. The scheme for selecting activity types is the same as in the Section Manager Summary (Section 4.9) and is described in Section 3.1.7. The milestone information is generated from the initial network. A description of the symbols representing the activity attributes are as follows (refer to Figure 4-9):

- S - Scheduled start time.
- + - Represents the time required for activity completion. One "+" corresponds to one day.

- E - Scheduled completion time.
- - - (Hyphen) represents slack time. One "-" corresponds to one day.
- L - Latest completion time.

COMPLEX_____

SUBSYSTEM/COMPONENT_____

SECTION MANAGER SUMMARY

DATE: 09/19/78

BUILD_____

MODULE			DESIGN					CODE					TEST				
			START		COMP			START		COMP			START		COMP		
NAME	NUMBER	RP	SCH	/ ACT	SCH	/ ACT	RP	SCH	/ ACT	SCH	/ ACT	RP	SCH	/ ACT	SCH	/ ACT	
PNMAIN	343C1	MC	6/12/78	6/12/78	7/ 3/78	6/14/78	MC	7/ 3/78	7/10/78	7/17/78	7/12/78	MC	7/17/78	7/18/78	8/ 7/78	7/18/78	
PNCNTL	34302	MC	6/12/78	6/14/78	7/ 3/78	6/15/78	MC	7/ 3/78	7/12/78	7/17/78	7/14/78	MC	7/17/78	7/18/78	8/ 7/78	7/18/78	
PNTTBL	343C3	MC	6/12/78	6/15/78	7/ 3/78	6/15/78	MC	7/ 3/78	7/14/78	7/17/78	7/14/78	MC	7/17/78	7/18/78	8/ 7/78	7/18/78	
PNRECX	34304	MC	6/12/78	6/17/78	7/ 3/78	6/18/78	MC	7/ 3/78	7/14/78	7/17/78	7/14/78	MC	7/17/78	7/18/78	8/ 7/78	7/18/78	
PNPRCX	34305	MC	6/12/78	6/16/78	7/ 3/78	6/16/78	MC	7/ 3/78	7/15/78	7/17/78	7/15/78	MC	7/17/78	7/27/78	8/ 7/78	8/ 3/78	
PNPREC	343C6	MC	6/12/78	6/23/78	7/ 3/78	6/24/78	MC	7/ 3/78	7/15/78	7/17/78	7/15/78	MC	7/17/78	7/27/78	8/ 7/78	7/27/78	
PNINCP	343C7	MC	6/12/78	6/19/78	7/ 3/78	6/20/78	MC	7/ 3/78	7/16/78	7/17/78	7/16/78	MC	7/17/78	7/18/78	8/ 7/78	7/18/78	
PNMLTN	34308	MC	6/12/78	7/ 6/78	7/ 3/78	7/ 8/78	MC	7/ 3/78	7/16/78	7/17/78	7/16/78	MC	7/17/78	7/31/78	8/ 7/78	7/31/78	
PNPSLC	343C9	MC	6/12/78	6/27/78	7/ 3/78	6/28/78	MC	7/ 3/78	7/16/78	7/17/78	7/16/78	MC	7/17/78	7/18/78	8/ 7/78	7/18/78	
PNCLTE	34310	MC	6/12/78	6/28/78	7/ 3/78	6/28/78	MC	7/ 3/78	7/17/78	7/17/78	7/17/78	MC	7/17/78	7/24/78	8/ 7/78	7/26/78	
PNCLTL	34311	MC	6/12/78	6/29/78	7/ 3/78	6/30/78	MC	7/ 3/78	7/17/78	7/17/78	7/17/78	MC	7/17/78	7/27/78	8/ 7/78	7/28/78	
NCASA	34312	MC	6/12/78	6/21/78	7/ 3/78	6/22/78	MC	7/ 3/78	7/17/78	7/17/78	7/17/78	MC	7/17/78	7/28/78	8/ 7/78	7/28/78	
PNCBAS	34313	MC	6/12/78	6/26/78	7/ 3/78	6/27/78	MC	7/ 3/78	7/17/78	7/17/78	7/17/78	MC	7/17/78	7/28/78	8/ 7/78	7/28/78	
PNSECT	34314	MC	6/12/78	6/30/78	7/ 3/78	6/30/78	MC	7/ 3/78	7/18/78	7/17/78	7/18/78	MC	7/17/78	7/31/78	8/ 7/78	7/31/78	
PNSMS	34315	MC	6/12/78	7/ 3/78	7/ 3/78	7/ 3/78	MC	7/ 3/78	7/18/78	7/17/78	7/18/78	MC	7/17/78	7/19/78	8/ 7/78	7/19/78	
PNBAS1	34316	MC	6/12/78	7/ 3/78	7/ 3/78	7/ 3/78	MC	7/ 3/78	7/18/78	7/17/78	7/18/78	MC	7/17/78	8/ 1/78	8/ 7/78	8/ 1/78	
PNBAS2	34317	MC	6/12/78	7/ 3/78	7/ 3/78	7/ 3/78	MC	7/ 3/78	7/18/78	7/17/78	7/18/78	MC	7/17/78	8/ 2/78	8/ 7/78	8/ 2/78	
PNSAVE	34318	MC	6/12/78	6/19/78	7/ 3/78	6/19/78	MC	7/ 3/78	7/19/78	7/17/78	7/19/78	MC	7/17/78	7/19/78	8/ 7/78	7/19/78	
PNDATA	34319	MC	6/12/78	6/20/78	7/ 3/78	6/20/78	MC	7/ 3/78	7/19/78	7/17/78	7/19/78	MC	7/17/78	7/20/78	8/ 7/78	7/20/78	
PNCHK	34320	MC	6/12/78	7/ 3/78	7/ 3/78	7/ 3/78	MC	7/ 3/78	7/19/78	7/17/78	7/19/78	MC	7/17/78	7/20/78	8/ 7/78	7/20/78	
PNSLBA	34321	MC	6/12/78	7/ 3/78	7/ 3/78	7/ 3/78	MC	7/ 3/78	7/19/78	7/17/78	7/19/78	MC	7/17/78	7/20/78	8/ 7/78	7/20/78	
PNST	34322	MC	6/12/78	7/ 3/78	7/ 3/78	7/ 3/78	MC	7/ 3/78	7/20/78	7/17/78	7/20/78	MC	7/17/78	7/20/78	8/ 7/78	7/20/78	
PNSTLE	34323	MC	6/12/78	7/ 8/78	7/ 3/78	7/ 9/78	MC	7/ 3/78	7/20/78	7/17/78	7/20/78	MC	7/17/78	7/20/78	8/ 7/78	7/20/78	
PNINST	34324	MC	6/12/78	7/ 3/78	7/ 3/78	7/ 4/78	MC	7/ 3/78	7/20/78	7/17/73	7/20/78	MC	7/17/78	7/20/78	8/ 7/78	7/20/78	
PNPSLN	34325	MC	6/12/78	7/ 4/78	7/ 3/78	7/ 4/78	MC	7/ 3/78	7/20/78	7/17/78	7/20/78	MC	7/17/78	7/21/78	8/ 7/78	7/21/78	
PNSTBN	34326	MC	6/12/78	7/ 4/78	7/ 3/78	7/ 5/78	MC	7/ 3/78	7/21/78	7/17/78	7/21/78	MC	7/17/78	7/21/78	8/ 7/78	7/21/78	
PNPLHD	34327	MC	6/12/78	7/ 5/78	7/ 3/78	7/ 5/78	MC	7/ 3/78	7/21/78	7/17/78	7/21/78	MC	7/17/78	7/21/78	8/ 7/78	7/21/78	
PNZCNV	34328	MC	6/12/78	7/ 6/78	7/ 3/78	7/ 6/78	MC	7/ 3/78	7/21/78	7/17/78	7/21/78	MC	7/17/78	7/21/78	8/ 7/78	7/21/78	
PNRSET	34329	MC	8/28/78	8/28/78	9/11/78	9/ 8/78	MC	9/11/78	9/ 8/78	9/18/78	9/14/78	MC	9/18/78	9/15/78	10/ 2/78	9/23/78	
PNACS	34330	MC	6/12/78	6/18/78	7/ 3/78	6/20/78	MC	7/ 3/78	7/21/78	7/17/78	7/21/78	MC	7/17/78	7/21/78	8/ 7/78	7/21/78	
PNDIGT	34331	MC	8/28/78	8/28/78	9/11/78	9/ 8/78	MC	9/11/78	9/ 8/78	9/18/78	9/12/78	MC	9/18/78	9/14/78	10/ 2/78	9/25/78	
PNDCTP	34332	MC	8/28/78	8/28/78	9/11/78	9/ 8/78	MC	9/11/78	9/ 8/78	9/18/78	9/12/78	MC	9/18/78	9/14/78	10/ 2/78	9/25/78	
PNSTLX	34333	MC	8/28/78	8/28/78	9/11/78	9/ 8/78	MC	9/11/78	9/ 8/78	9/18/78	9/12/78	MC	9/18/78	9/14/78	10/ 2/78	9/25/78	
PNSAVX	34334	MC	8/28/78	8/28/78	9/11/78	9/ 8/78	MC	9/11/78	9/ 8/78	9/18/78	9/12/78	MC	9/18/78	9/14/78	10/ 2/78	9/25/78	
PNPLTP	34337	MP	8/28/78	8/28/78	9/11/78	9/11/78	MP	9/11/78	9/11/78	9/18/78	9/15/78	MP	9/18/78	9/15/78	10/ 2/78	9/25/78	
PNFLGT	34338	MP	8/28/78	8/25/78	9/11/78	9/11/78	MP	9/11/78	9/11/78	9/18/78	9/15/78	MP	9/18/78	9/18/78	10/ 2/78	9/26/78	
PNSPLC	34339	MP	8/28/78	8/28/78	9/11/78	9/11/78	MP	9/11/78	9/11/78	9/18/78	9/15/78	MP	9/18/78	9/18/78	10/ 2/78	9/26/78	
PNSPLN	34340	MP	8/28/78	8/28/78	9/11/78	9/11/78	MP	9/11/78	9/11/78	9/18/78	9/15/78	MP	9/18/78	9/18/78	10/ 2/78	9/26/78	

Figure 4-8. Section Manager Summary

COMPLEX_____ DATE_____

SUBSTEP/COMPONENT_____ MILESTONE SCHEDULE BUILD_____

ACTIVITY NAME	ACTIVITY NUMBER	RP
RA-DE-ANALYSIS	341CCC	
RACFRS-DESN	341441	JB
RABFRM-DESN	341451	JB
RAFFRS-DESN	341461	JB
RACCMP-DESN	341471	LP
RADBSR-DESN	341481	LP
RACCDB-DESN	341491	LP
RAFDER-DESN	3415C1	LP
RACNNR-DESN	341551	LP
RACFRS-CODE	341442	JB
RADBSR-CODE	341482	LP
RAFFRS-CODE	341462	JB
RACCDB-CODE	341492	LP
RABFRM-CODE	341452	JB
RAFDER-CODE	341502	LP
RACCMP-CODE	341472	LP
RADBSI-DESN	341701	MN
RACCMP-TEST	341473	LP
RACCDB-TEST	341493	LP
RAFFRS-TEST	341463	JB
RACFRS-TEST	341443	JB
RAFDER-TEST	341503	LP
RADBSR-TEST	341483	LP
RACNNR-CODE	341552	LP
RABFRM-TEST	341453	JB
RACNNR-TEST	341553	LP
RACDBA-DESN	341411	BW
RADBST-CODE	341702	MN
RACDBA-CODE	341412	BW
TARP-ANAL	341831	DM
RECUC-ANAL	341841	MP
RADFC-DESN	341751	MN
RADSLM-DESN	341761	MN
RADFC-DESN	341771	MN
RACFCI-DESN	341781	MN
RACREF-DESN	341791	MN

Figure 4-9. Milestone Schedule (Part 1 of 2)

COMPLEX_____ DATE_____

SUBSYSTEM/COMPONENT_____ MILESTONE SCHEDULE BUILD_____

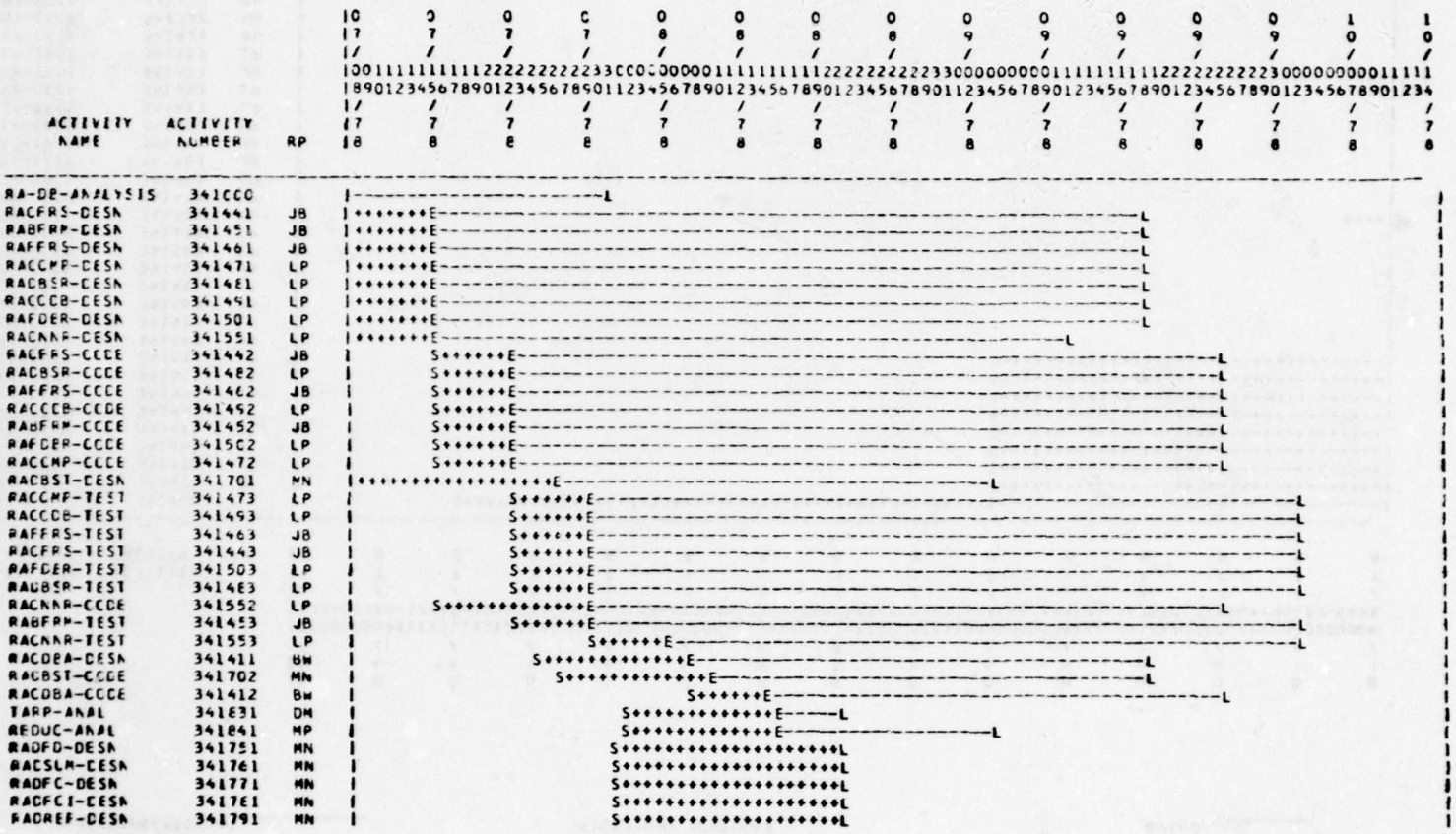

Figure 4-9. Milestone Schedule (Part 2 of 2)

SECTION 5 - DIAGNOSTICS

This section identifies the error messages provided by PN, their degree of severity and an explanation of the cause. These errors are listed at the end of the network predecessor listing.

MESSAGE NUMBER	MESSAGE TEXT	TYPE	DESCRIPTION
PN001	Activity is invalid	FATAL	Activity has zero start time, zero estimate and no predecessors. Set estimate to .01.
PN002	Card is missing or out of sequence	FATAL	Input data (Section 3.2) has improper card type sequencing. Correct sequence so that each activity has card types 1, 2, 3, and 4 if necessary.
PN003	Missing delimiter card at end of data	FATAL	Activity card 999999 is not present at end of data. Include this activity as last activity in input data. The predecessors for this activity are all the activities with no immediate successors.
PN004	Field-3 on control card 3 cannot equal 0	FATAL	The increment value (item 3) on activity completion summary card (Section 3.1.3) is blank or zero. Set to a positive nonzero number.
PN005	Invalid character specified as rightmost digit of activity number on control card	FATAL	A value in column 1, 3, or 3 in Section Manager Summary Card-1 (Section 3.1.4) is not a blank or decimal digit. Correct improper character to blank or decimal digit.
PN006	Warning: Activity/ID-NO.(i)/ has a predecessor/ID-NO.(j)/ which has not been completed	INFOR-MATION	Activity i has a predecessor j that has no actual completion date. Include actual completion date for activity j.
PN007	Warning: Activity/ID-NO.(i)/ has a predecessor/ID-NO.(J)/ which has an inconsistent completion date	INFOR-MATION	Activity i has a predecessor j that has an actual completion date later than activity i's actual start date. Resolve actual dates so activity j's actual completion date is less than or equal to activity i's actual start date.

MESSAGE NUMBER	MESSAGE TEXT	TYPE	DESCRIPTION
PN008	Error in TE calculation	FATAL	A cycle exists in the network. Eliminate cycle.
PN009	Error in TL calculation	FATAL	A cycle exists in the network. Eliminate cycle.
PN010	The following value is listed as a predecessor but does not appear in the activity list/ID-NO/	FATAL	An ID number has been listed as predecessor but is not a valid activity number in input data. Correct invalid predecessor to valid activity number.
PN011	Predecessor index not found	FATAL	An Activity Predecessor Card (Table 3 - 3) has an inconsistency between the value listed as the number of predecessors and actual number of predecessors. Locate inconsistency and correct.